CLAIMS

What is claimed is:

1. A fixation device for attaching an external prosthesis to a bone, the fixation device comprising a main body including a compliant portion operable to be expanded and contracted, the main body having a first end fixedly retained in the bone and a second end coupled to an extension for receiving the external prosthesis, wherein the main body and the extension define respectively first and second engagement surfaces for constraining a bone graft therebetween.

2. The device of claim 1, wherein the main body is coupled to the extension by a Morse taper connection.

3. The device of claim 2, wherein the main body includes a female taper receiving a male taper of the extension.

4. The device of claim 1, wherein the extension includes internal threading for receiving the external prosthesis.

5. The device of claim 1, wherein the first engagement surface is a superior shoulder of the main body.

6. The device of claim 1, wherein the second engagement surface is a ring coupled to the extension.

7. The device of claim 1, wherein the extension is integral to the main body.

8. The device of claim 1, wherein the extension includes a plurality of suture apertures for attaching skin.

9. The device of claim 1, wherein the main body includes a bone tray operable to engage a prepared bone surface.

10. The device of claim 1, wherein the main body further includes a plurality of apertures for receiving bone fasteners.

11. The device of claim 1, wherein the main body is attached to the bone by an anchor.

12. The device of claim 9, wherein the main body further includes a post attached to the bone tray.

13. The device of claim 12, wherein the post is threadably coupled to the compliant portion.

14. The device of claim 12, wherein upon rotating the post, the compliant portion is expanded to a desired condition of expansion after the main body is attached to the bone.

15. The device of claim 11, wherein the compliant portion is integral with the anchor.

16. The device of claim 15, wherein the compliant portion is shaped as a helical spring.

17. The device of claim 9, wherein the compliant portion is directly attached to the bone tray.

18. The device of claim 1, wherein the compliant portion includes spring washers.

19. A fixation device for attaching an external knee prosthesis to a distal femoral bone having an attached patella, the fixation device comprising:

a main body operable to engage a prepared femoral surface, the main body having a superior shoulder;

an extension coupled to the main body with a taper to taper connection, the extension including a inferior ring, the inferior ring and the superior shoulder configured to constraint the patella therebetween;

an anchor coupled to the main body and operable to be fixedly retained within the femoral bone; and

a compliant portion operable to be expanded and contracted, the compliant portion disposed between the body and the anchor.

20. The device of claim 19, wherein the main body further includes a femoral tray operable to engage the prepared femoral surface;

.

21. The device of claim 19, wherein the compliant portion is integral with the anchor.

22. The device of claim 19, wherein the compliant portion is shaped as a helical spring.

23. The device of claim 19, wherein the anchor includes external helical threads operable to fixedly attach the anchor within a cavity formed within the femoral bone.

24. The device of claim 19, wherein the main body includes a threaded post operable to threadably pass through the femoral tray.

25. The device of claim 24, wherein the post is threadably attached to the compliant portion and is operable to adjust a force applied to the compliant portion.

26. A compliant fixation device for attaching an external prosthesis to a bone having an attached bone graft, the fixation device comprising first and second engagement surfaces for constraining the bone graft therebetween.

27. The compliant fixation device of claim 26, wherein the bone is a distal femur with an attached patella, and the first and second engagement surfaces are configured to retain the patella.

28. The compliant fixation device of claim 27, wherein the second engagement surface is a patella cap.

29. The compliant fixation device of claim 26, further comprising a soft tissue attachment.

30. A method for attaching an external prosthesis to a bone having an attached bone segment, the method comprising:

anchoring a first end of a compliant fixation device to a cavity formed in the bone;

constraining the bone segment between first and second engagement surfaces of the fixation device; and

suturing skin on a second end of the fixation device.

31. The method of claim 30, further comprising expanding a compliant portion of the fixation device after anchoring.

32. The method of claim 30, further comprising attaching the external prosthesis to the second end of the fixation device.

33. The method of claim 30, wherein the bone is a distal femur and the bone segment is a patella.